



**STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION**



May 5, 2003

Mr. Gene Muhlherr
Islander East Pipeline Company, LLC
454 East Main Street, Route 1
Branford, CT 06405

RE: WATER QUALITY CERTIFICATE APP. #200300937
Towns: Cheshire, Wallingford, North Haven, East Haven, North Branford and Branford

Dear Mr. Muhlherr:

The Department of Environmental Protection (the "Department") acknowledges receipt of new application materials regarding your proposal to upgrade existing interstate natural gas pipeline facilities and construct a new gas pipeline within the coastal boundary, inland wetlands, tidal wetlands and coastal waters of the state. This material received on March 17, 2003, includes a new Water Quality Certificate (WQC) application submitted pursuant to section 401 of the Federal Clean Water Act, as amended, and assigned #200300937 by the Department. Also received on March 17, 2003 were revisions to the pending Tidal Wetlands and Structures & Dredging (TWSD) permit application #200200761-SJ.

The purpose of this letter is to comment on the completeness of the above-referenced federal WQC application and to request additional information that the Department deems necessary to process the application. As you know, with respect to your TWSD permit application, Connecticut Public Act 02-95 prohibits the Department from considering and rendering a final decision on any state application related to utility crossings of Long Island Sound until after June 3, 2003. However, please note that information requested below to complete the federal WQC application is also necessary to complete the TWSD permit application as the application requirements and standards for authorization are essentially the same.

In addition, this information, particularly the alternatives analysis requested, has a bearing upon resolution of the Federal Coastal Zone Management Consistency (FCC) appeal now pending before the U.S. Department of Commerce. As you know, our October 15, 2002 FCC denial of the proposed project focused on adverse impacts to Connecticut's coastal resources and water-dependent uses and potential alternatives to the proposed project that could eliminate or reduce these impacts.

Please mail the required additional materials to the following address and include the application identification number on all correspondence.

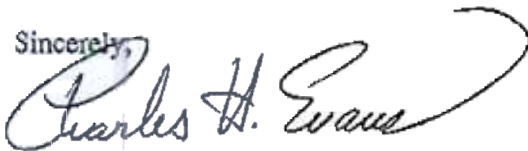
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<http://dep.state.ct.us>
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Department of Environmental Protection
Office of Long Island Sound Programs
Attn: Susan Jacobson
79 Elm Street
Hartford, CT 06106-5127

Please be aware that any work in tidal wetlands, or waterward of the high tide line, in the tidal, coastal or navigable waters of the state undertaken without appropriate authorizations is a violation of state law and is subject to enforcement actions by this Department and the Office of the Attorney General.

If you have any questions, please contact Susan Jacobson of my staff at (860) 424-3034. Thank you.

Sincerely,



Charles H. Evans
Director
Office of Long Island Sound Programs

CE/PF/SJ
Enclosures

cc: Joseph Reinemann, Islander East Pipeline Company, LLC
Cori Rose, U.S. Army Corps of Engineers
Mike Ludwig, NMPS
File TWSD #200200761-SJ/Branford
File WQC #200300937
David Wrinn, Office of the Attorney General
David Carey, Department of Agriculture/Bureau of Aquaculture
Charles Duffy, Robinson and Cole
Joanne Wachholder, FERC
Michael Marsh, US EPA

**MATERIALS REQUIRED TO REVIEW APPLICATION
WATER QUALITY CERTIFICATE APP. #200300937
Cheshire, Wallingford, North Haven, East Haven, North Branford and Branford**

Alternative Routing/Alignment Analysis

Generally, to receive approval for a proposal, an applicant must fully demonstrate that: (1) adverse impacts, including specific impacts on coastal resources, navigation and water-dependent uses have been minimized to the greatest extent practicable; (2) the scope and extent of encroachments into tidal, coastal or navigable waters have been minimized to the greatest extent practicable; (3) any remaining adverse impacts are acceptable and consistent with applicable statutory standards; (4) alternatives with the least adverse impact and minimal encroachment into the public trust area waterward of the mean high water have been utilized.

While the Department recognizes that the proposed route is the one for which the Federal Energy Regulatory Commission (FERC) has provided its Certificate, it still remains the responsibility of the applicant, as part of the Department processes, to fully evaluate alternatives and provide a compelling demonstration that there are no feasible alternate alignments that could further minimize adverse impacts on Connecticut's coastal resources and water-dependent uses while still meeting the stated project goals. As we have discussed with you, the Department can only authorize that alternative with the least impact. In order for the Department to determine that the alternative with the least adverse environmental impact has been proposed, the following additional information is necessary.

1. While you have provided bottom characterization surveys, marine geophysical surveys and video analysis of the proposed work corridor, and some level of detail for Option 2 and Option 3, we do not have this level of information from other alternative routes which you considered and dismissed. Please provide the Department with an identification of all of the other alternate routes and alignments considered and a summary of the environmental advantages and disadvantages associated with each and the reasons why the alternatives were rejected.
2. Please provide a detailed analysis of alternative alignments across the Sound that would take maximum advantage of corridors that were previously disturbed by infrastructure or other past or present uses. For example, it does not appear that you have considered installing a new pipeline adjacent to the existing Iroquois Gas Transmission System pipe off of the Milford shoreline. Because of this previous disturbance, another pipeline routed through the same area may result in less additional habitat disruption and overall environmental impacts to Long Island Sound than the currently proposed pipeline route/alignment.
3. Please provide a full evaluation and analysis of the environmental impacts of the ELI System Alternative which was found to be the environmentally preferable alternative in FERC's *Islander East Pipeline Project – Final Environmental Impact Statement*.
4. Please provide a thorough evaluation and analysis of the environmental impacts of an option that employs the Long Island Sound portion of the recently withdrawn Iroquois

ELI Extension Project which would now appear to be an option available to Islander East and which also appears to have less environmental impact on Long Island Sound, overall, than your current proposal

5. Department staff have reviewed the proposed route research cited by your consultants and have compiled a list of those references and documents that may aid the Department in evaluating alternative routing or alignments. Please provide the enclosed "References to be Submitted", along with any more recent related applicable documents, including maps or surveys.
6. Please provide the Department with a color copy of the *Marine Geophysical Survey Program - Islander East Pipeline Branford, CT to Wading River, NY* prepared by Ocean Surveys and dated May 18, 2001. In this report, it appears that the Option 2 route alternative which is slightly shorter than the proposed route would be feasible and would impact less area of shellfish beds. In sum, this option would have less overall in-water disturbance. The study indicates that there are no magnetic anomalies in Option 2 while there are 31 anomalies in Option 1. Further, it states that the chances of encountering bedrock along either route are similar. Please explain why this option was dropped from consideration.
7. Staff have reviewed the *Analysis of Video Records of Sea Floor Features Collected by Remotely Operated Vehicle Along the Proposed Islander East Gas Pipeline Corridor in Long Island Sound* by Roman Zajac and dated August 2002. Please indicate if this type of analysis has been done elsewhere along the Connecticut coastline. If so, please provide such information.

Marine Habitat

8. The Thimble Islands region is generally considered to be an area of exceptional marine habitat diversity. Please provide the Department with a thorough evaluation of the short and long-term impacts, both direct and indirect, of constructing and operating a pipeline in this unique area of the Sound.
9. The currently proposed backfill plan includes a backfill tolerance of +2'/-1' from the ambient seafloor. Please include a discussion of environmental impacts on marine resources and water dependent uses associated with the proposed grade variations. Also discuss the impact of anticipated levels of suspended sediments on marine organisms and habitats in the zone of influence of the project, particularly in light of the exceptional diversity and sensitivity of the marine resources in the Thimble Islands region referenced above.
10. Typically, naturally occurring eastern oysters (*Crassostrea virginica*) are found in areas which are comprised of hard benthic substrate from the intertidal area to depths of approximately -35', while commercial oysters are grown to depths to -50'. It appears that the proposed construction methodology would cause irreversible adverse impacts to approximately 38 acres of hard benthic substrate- habitat which is critical for oysters. This area of direct impact was determined by calculating the trench width and spoil

mound corridor between the horizontal directional drilling (HDD) exit pit and the -50' depth contour. This number does not include the area impacted by anchor strikes and cable sweep. Please indicate if you concur with the total acreage of irreversible habitat loss. If you disagree with this calculation, please explain the reasons and provide your calculated area of impact.

11. As you know, staff of CT's Department of Agriculture, Bureau of Aquaculture have indicated during recent meetings that in-kind restoration or mitigation of the damaged oyster habitat is not likely feasible due to the nature of the sediment proposed to be disturbed. Please provide a compensation plan for the loss of the hard benthic substrate habitat. This plan should include possible off-site restoration projects.

Alternative Techniques

While Islander East Pipeline Company, LLC has recently discussed modifications in installation methodology which could reduce water quality impacts, there are additional technologies which must also be evaluated and employed, if practicable, to further reduce direct benthic impacts associated with the proposed anchor system and exit hole footprint.

12. Please provide this Department with a detailed alternatives analysis which includes a discussion of employing live-boating, spuds, and/or semi-permanent helical anchors instead of utilizing the proposed 10-point lay barge anchor system for all or a portion of the work. In this analysis, please include any industry experiences where these alternate technologies have failed or succeeded.
13. As you are aware, Iroquois Gas Transmission System's Eastchester Extension project in New York successfully used sheetpile bulkheading at the exit pit to reduce the size of the footprint. Please discuss and address the feasibility of this alternative.

Horizontal Directional Drilling

14. The Department's experience with HDD applications in Connecticut and elsewhere is that there are often complications during construction such as drill hole failure. As you are most likely aware, once this Office authorizes construction techniques for a particular location, the authorization is not applicable to other locations or variations in technique. Therefore, in the event of complete HDD failure, please identify and provide necessary information regarding alternate locations and installation techniques for possible conditional authorization from this Office. If conditional locations and techniques are not approved up-front, significant delays or total project termination could result.
15. As currently proposed, the HDD activity puts some town shellfish beds at risk in the event that a frac-out (release of drilling fluid) reaches the benthic surface. Please explain why HDD was not sited within the footprint of the Tilcon Channel to minimize adverse impacts to existing shellfish beds associated with the potential for frac-outs.

Backfill Plan

16. As discussed at the April 15, 2003 technical meeting, please provide a bottom velocity study to determine if the currently proposed backfill sediment will be subject to erosion. Also, please explain why the dredge spoil cannot be temporarily stored during construction and reused as backfill for the dredged trench subsequent to installation of the pipeline.
17. Also discussed at the April 15 technical meeting was a discrepancy regarding the depth of backfill on the engineered backfill plan sheet SK-19. Please correct the depth discrepancy.
18. At this time, DEP staff do not anticipate additional sediment testing associated with the proposed dredging. However, please be aware that further modifications to the backfill plan may warrant additional testing.

Tidal Wetlands

The proposed work will impact two areas formerly connected to tidal wetlands. You have identified these areas as wetland CT-A37 and a pond CT-A21. This Department will continue to review the pending application pursuant to C.G.S. 22a-32 as these areas appear to meet the definition of "areas formerly connected to tidal waters" as defined by C.G.S. Section 22a-30-2(g): *"those areas which have retained tidal wetland soil characteristics, which can support some but not necessarily all of the vegetation specified in section 22a-29 of the General Statutes upon re-establishment of a tidal connection, and to which a tidal connection can be re-established."* In reference to these wetlands, please address the following items:

19. In "Site-Specific Wetland and Waterbody Crossings" (Attachment C), dated July 2002, a note on page CT-WL-9.69 indicates that the existing pond will be drained. Other application materials indicate that no wetlands will be drained or permanently filled as a result of the Islander East Pipeline Project. In addition to clarifying this discrepancy, please provide this Office with a step-by-step construction methodology of both the wetland and pond crossing. Include cubic yards of material to be excavated, stockpile locations, and elevation details. Please provide detailed plans showing both the existing and proposed conditions of wetland CT-A37 and pond CT-A21.
20. Please update the "Impacts Analysis Report" by TRC Environmental Corp dated February 12, 2002. The document should discuss the currently proposed project. Specifically, the tidal wetlands information on page 13 needs to be updated.
21. The desired manner of wetland mitigation is on-site restoration. Please explore the possibility of returning tidal flow to wetland CT-A37. Additional information on the current health of pond CT-A21 is necessary prior to determining preferred mitigation options. Susan Jacobson will make arrangements to visit the pond with a staff ecologist to determine feasible mitigation.

Water Dependent Use

It appears that the siting of a non-water dependent gas transmission pipeline through an extensive shellfish habitat area would cause a permanent adverse impact to both an existing and potential future water-dependent use, shellfishing. As discussed above, it is anticipated that the proposed pipeline installation would cause irreparable damage to shellfish habitat. In addition, the proposed backfill options would likely create topographic irregularities that could adversely affect the efficiency and safety of the operation and handling of harvesting equipment employed by the local shellfishing industry.

22. Please explain what measures are proposed to preclude or reduce adverse impacts to this water-dependent use.
23. According to the "Engineered Backfill Plan" dated March 2003, Islander East is committed to achieving a backfill tolerance of +2'/-1' from the ambient seafloor. What measures will be employed so as to ensure this tolerance?

General Application Information

24. DEP's Inland Water Resources Division has requested a plan for long-term monitoring and control of non-native invasive plants along the upland portion of the route. Please provide such monitoring and control plan.
25. Please provide the Department with a gas pipeline infrastructure map of the northeast U.S. to assist the Department in understanding FERC's goal for supply diversity to Long Island, NY.
26. An "Impacts Analysis Report" mentioned in item #19, above, was submitted in the original February 13, 2002 Structures, Dredging & Fill and Tidal Wetlands application. There have been several modifications and refinements to the application since that time. Please provide an updated "Impacts Analysis Report".
27. Please be advised that should you receive approval of this project, you will be required to develop a detailed environmental monitoring plan.
28. The Department generally requires a performance bond prior to horizontal directional drilling to ensure funding for emergency response clean-up. At this time, the amount of the bond is based on \$1,000 per linear foot of drill path. Also, an HDD operation and monitoring plan will be required. Please refer to the enclosed sample for reference. Please provide an operation and monitoring plan.

References To Be Submitted

Hoehn, T.R. Morris, J.D. 1977. Species abundance, compositions and diversity of marine benthic invertebrates of Connecticut with special consideration for the New Haven oil spill. Technical Report, Marine Region, CT Dept. Environmental Protection, Hartford, CT.

Knebel, H.J. and Poppe, L.J., 2000. Sea-floor environments within Long Island Sound: A regional overview. *Journal of Coastal Research* 16: 533-550.

National Marine Fisheries Service (NMFS). 2001b. Letter dated May 9, from S. Gorski (Field Office Supervisor, Habitat Conservation Division) to J. Thommes (Natural Resource Group, Inc.)

Neff, J.M. 1987 Biological Effects of Drilling Fluids, Drill Cuttings and Produced Waters, in Boesch, D.F. and Rabalais N.N. (eds.) 1987. *Long-Term Environmental Effects of Offshore Oil and Gas Development*, pp. 469-538. Elsevier Applied Science Publishers, London)

Poppe, L.G., H.J. Knebel, Z.J. Mlodzinska, M.E. Hastings, B.A. Seekins. 2000. Distribution of surficial sediment in long island sound and adjacent waters; texture and total organic carbon. *Journal of Coastal Research* 16: 567-574.

Reid, R.N., A.B. Frame & A.F. Draxler. 1979. Environmental baselines in Long Island Sound, 1972-1973. NOAA Technical Report NMFS SSRF-738.

Swanson, K. 1977. Benthic polychaete distributions in Fisher Island Sound and their relationship to the substrate. Masters Thesis, University of Connecticut, Storrs, CT

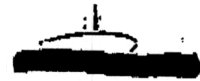
Turner, J.L. 2001. Coastal and pelagic birds of Long Island.

Zajac, R.N. 1999. Understanding the seafloor landscape in relation to assessing and managing impacts on coastal environments. Pp 211-227 in: J.S. Gray, W. Ambrose Jr., A. Szaniawska (eds) *Biogeochemical Cycling and Sediment Ecology*, Kluwer Publishing, Dordrecht

Zajac, R.N., Lewis, R.S., Poppe, L. J. Twichell, D.C., Vozarik, J. and DiGiacomo-Cohen, M.L. 2000. Relationships among sea-floor structure and benthic communities in Long Island Sound at regional and benthoscape scales. *Journal of Coastal Research* 16: 627-640.

Zajac, R. N., R. S. Lewis, L. J. Poppe, D. C. Twitchel, J. Vozarik, and M. L. Digiacomo-Cohen. 2000. Relationships along seafloor structure in benthic communities in Long Island Sound at regional and benthoscape scales. *Journal Coastal Research*, 16: 627-640.

SAMPLE



MONITORING AND OPERATIONS PLAN

The Monitoring and Operations Plan consists of the following conditions and corresponding operational and monitoring protocols for the Horizontal Directional Drilling (HDD) Contractor.

Condition 1- Normal Drilling Conditions

- Normal drilling - no release
- Exit pit bentonite removal
- Routine drilling data collection
- Routine monitoring with side scan sonar from vessel

Condition 2- Loss of Circulation

- Loss of circulation during drilling
- Slow down of drilling and adjust drill to regain circulation
- Shut down of drilling and add "Loss of Circulation Material"
- Focused side scan sonar monitoring and TV
- Stop drilling if leak is detected
- Continue drilling if circulation is regained and no release is detected

Condition 3- Drilling Fluid Release and Remediation

- Drilling fluid release confirmed
- Notify regulatory agencies
- Implement operational procedures to attempt to stop release
- Monitoring to define release area
- Diving team to install bentonite containment system
- Mobilize remediation crew with vacuum system
- Remove bentonite

The remainder of this plan provides specific details regarding the various monitoring and operations conditions described above.

Condition 1: Normal Drilling Conditions

Drilling Operations

The HDD Supervisor shall provide the Environmental Engineer with the following information on an hourly basis.

Position of drill head
Volume of drilling fluid mixed and in use, accounting for bentonite swelling (15-20 times dry volume)
Calculation of drilling fluid volume based on drilling length and drill diameter
Variation of estimated volume used and calculated volume
Equipment breakdowns and repairs
Drilling pressure, changes, and time
Drilling fluid, bentonite, additions, volume, and time

Exit Pit Maintenance

Release of bentonite is unavoidable at the drill exit point. Some volume of bentonite will leak out onto the seabed at the end of the drill process and during the reaming and conduit installation processes. Prior to drill exit and while the potential for bentonite release exists, diver teams will install a water filled temporary dam around the exit point to act as an underwater "silt fence". This dam will contain the heavy bentonite as it escapes to allow easy clean-up using high-capacity vacuum systems.

* divers to make connection

Monitoring Plan

Continuous side scan sonar monitoring; two passes along drill alignment per hour. Once per day, during routine monitoring, the side scan sonar will pass 50 feet parallel from the drill alignment to evaluate potential releases.

A log shall be kept of all survey monitoring, by the monitoring contractor, and available for inspection by the Environmental Engineer, Cross-Sound Cable Company (CSC), or Connecticut Department of Environmental Protection (CTDEP).

If a release is detected and confirmed during routine monitoring, Condition 3 will be implemented.

Condition 2: Loss of Circulation

Drilling Requirements

Loss of circulation can indicate blockage of return path, release of drilling fluids into a void space around the directional drill, or a breakout to the surface of land or into the water body. The following shall be conducted if loss of circulation occurs, unless an alternative is mutually agreed to by CTDEP and CSC.

HDD Supervisor shall immediately notify the Environmental Engineer of Condition 2.

Drilling Supervisor may adjust the drill head for up to 15 minutes to restore circulation.

Drill head can be retracted a short distance (20 feet) prior to shutdown.

Shut down drilling to investigate if circulation cannot be regained by adjustment of drill.

Pump "loss of circulation material" into borehole for approximately 15 minutes without advancing the drill head to seal voids/fissures and reestablish circulation.

The drilling operation will be restarted if circulation is regained. The HDD Supervisor will notify the Environmental Engineer and Condition 2 will continue until a complete survey of the drill alignment is performed, as specified under Condition 2, Monitoring Plan. If releases are not identified, the drilling and monitoring will change to Condition 1.

If circulation is not reestablished, the survey vessel will continue to monitor the drilling path for two hours to try to locate the potential release. If a release is not detected during the two hours, drilling will stop and the survey vessel will widen the area of investigation to beyond the drill path alignment. If a release is not detected, drilling will be continued and Condition 2, Monitoring Plan, will continue.

Monitoring Plan



Mark location of drill head with surface buoy.

Focused side scan sonar monitoring as per Condition 1.

Initiate underwater TV monitoring.

If a drilling fluid release is detected, drilling will be stopped and Condition 3 will be immediately implemented.

If a release is not detected, drilling will be reactivated and monitoring will continue under Condition 1 or 2 as applicable.

Condition 3: Drilling Fluid Release and Remediation

Operations

* copies of MSDS for bentonite
* proposed disposal

Should the monitoring team detect a drilling fluid release when loss of circulation has occurred and cannot be re-established, the following steps apply.

Shutdown of drilling operations for eight hours to seal the fissure after loss of circulation material has been fed into the borehole under Condition 2. The drill head will be pulled back from its furthest advancement point prior to shutdown.

Begin circulation of drilling fluid for a 15-minute period following the eight-hour shutdown. The drill head may be advanced to its previous furthest point of penetration.

If circulation returns, then drilling will continue as long as monitoring has determined that the release has stopped or has been slowed to the point where a significant impact will not result. The Environmental Engineer and CSC will consult with the CTDEP prior to starting drilling operations. Discussion on what constitutes a significant impact is presented later in this section.

During any drilling shutdown period, the HDD Contractor will be permitted to circulate drilling fluid on a four-hour cycle for a period of approximately 15 minutes to prevent complete blockage and loss of drilling equipment.

If circulation does not return or significant release continues, then a determination shall be made by CSC, the Environmental Engineer, the HDD Contractor, and CTDEP as to whether to continue drilling, repeat a four-hour waiting period, seal the fissure by grouting, or reroute the drill path. A decision to proceed will be based on the significance of impacts resulting from a continuing release.

Repeated attempts to shut down and seal the fissure may be conducted by the HDD Contractor. Up to six attempts will be permitted prior to making a decision to continue drilling, seal the fissure by grouting, or reroute the drill path.

If repeated attempts to seal the fissure by waiting have failed to stop or reduce the release to acceptable levels, then the driller shall be permitted to grout the fissure with a cement-bentonite-water slurry or reroute the drill head. Sealing the fracture with grout will occur at the sea floor at the location of release, if practical. Grout will be injected into the fracture under pressure and be permitted to cure (harden). Divers will be used to guide the grout injection by positioning the injection pipe at the fissure. From a boat above, grout will be fed under pressure down the injection pipe and into the fissure.

- Following the grouting and curing period, drilling will recommence and will continue if the release is stopped or reduced to a point where no significant impact will occur. The Environmental Engineer will consult with CSC and CTDEP prior to resuming drilling operations.

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If the decision is made to reroute the drill path outside the permitted drill route because an acceptable solution cannot be achieved, then the plans and procedures shall be discussed with CTDEP, the U.S. Army Corps of Engineers (USACE), CSC, HDD Contractor, and the Environmental Engineer. Rerouting may involve both vertical and horizontal adjustments in the drill path. The abandoned borehole may be grouted to seal a potential fissure pathway for the rerouted conduit. Approvals for rerouting outside the permitted drill route shall be obtained from both the CTDEP and USACE.

Grout to be used during the project will consist of a mixture of cement, bentonite, and water. When the cement is fully hydrated, the grout will form a solid hardened mass. The volume of grout required will depend on the size of the fracture or upon the distance the drill head is withdrawn from the furthest point of advancement of the borehole. Fractures shall be monitored to ensure that grout pumping ceases if grout is observed at the surface.

If a release has been detected, but circulation has not been lost, then the following, sequence of operations shall apply.

If the release does not pose a significant impact, as defined later in this section, then drilling may continue with the approval of CTDEP. The HDD Contractor will add Loss of Circulation Material (LCM) to the drilling fluid, and monitor the release point as defined in this section.

If the release is significant, then drilling operations will immediately be shut down for a period of approximately 30 minutes while loss of circulation material is mixed with drilling fluid. LCM shall be pumped into the borehole without advancing the drill head for a period of approximately 15 minutes or until the LCM is noted by the monitoring team at the point of release. As long as circulation of returns continues and LCM is closing the fissure by direct observation, of the release, then the driller will continue to circulate drilling fluid containing LCM. Drilling will advance forward when the release has been sealed or slowed to a point where no significant impact will result, CTDEP will be consulted prior to continuance of drilling advancement.

If the significant release is not slowed after 15 minutes or observation of LCM at the release point, then drilling operations shall be modified as directed by CTDEP. The stepwise procedure described previously in this section when a release and loss of circulation occurs shall be implemented from this point forward.

Monitoring Plan

In the event of a detected drilling fluid release, the Environmental Engineer will immediately contact the:

1. CTDEP Oil and Chemical Spills Section of the Waste Management Bureau on their 24-hour hot line at (860) 424-3338
2. CTDEP Office of Long Island Sound Programs at (860) 424-3034. The telephone notification will be followed by written notification to be sent by facsimile by the next business morning to the CTDEP Long Island Sound Programs at (860) 424-4054. The original written notice will be mailed to the CTDEP Office of Long Island Sound Programs at 79 Elm Street, Hartford, Connecticut 06106-5127.
3. National Marine Fisheries at (978) 281-9300
4. United States Army Corps of Engineers at (978) 318-8335
5. Bentonite Remediation Contractor as determined by HDD Contractor

Also,

- Harbor Master
- Coast Guard
- John Volk



The survey vessel and divers will monitor the release area and continue to monitor the remaining drill path; the boundaries of the impacted area will be determined

The origin of the breakout will be located and surface buoyed

Down-current areas will be investigated by divers to assess impacts

Television, side scan sonar and diving data will be collected to allow CSC, the Environmental Engineer, HDD Supervisor, and CTDEP to determine the significance of the release.

The diving team will be assigned to the release area to monitor the status of the release and to cordon the release area to minimize the area of impact and facilitate the removal of deposited material. The HDD Contractor shall maintain on site, and have ready at all times, at least 200 feet of bentonite containment fencing. This fence will be assembled and ready for immediate deployment when a release, failure, or breach is detected. This shall be installed within the first eight hours of a detection of a release. Additional divers will be available within eight hours should they be required. The dive team and survey vessel will be in contact with the Environmental Engineer and HDD Supervisor at all times via two-way radio. The dive team shall make measurements of the horizontal limits and depth of deposition of the drilling fluid. These measurements shall be made at slack tide during sealing and active drilling operations, while a release continues. The dive team will also make hourly visual observations of the release point to assess changes in flow rates and to evaluate underwater containment fence integrity. The dive team shall be monitoring the release point when loss of circulation material is being fed to the borehole and during startup periods following shutdown of drilling operations.

Following detection of a release, a remediation crew with a vacuum system shall be mobilized and moved to the site, if required by the CTDEP; otherwise, CTDEP can suspend drilling operations.

The vacuum system shall be near the site and shall have all of the necessary staff, equipment, tools, supplies, and fuel to be fully operational upon arrival.

Mobilize two high-volume vacuum trucks to the site within four to six hours of notification. The vacuum trucks shall have a minimum storage capacity of 3,000 gallons and a minimum vacuum capacity of 2,100 cubic feet per minute (CFM) - 27 inches of mercury. For a liquid material the pumping capacity should be nominally 200 to 300 gallons per minute (GPM). Each truck shall be equipped with 200 feet of 4 to 6 inch diameter suction hose and be capable of recovering bentonite from within the harbor. Divers will also arrive at the site within four hours to operate the suction hose at the point of release within the harbor. They will have two-way communications capability with the vacuum truck operator. The divers will operate the suction end of the vacuum hose and will control the removal of the drilling fluid deposits. Initially, removal shall be primarily focused over the release point and areas of thickest deposition. The divers shall also monitor the input of new drilling fluid into the release zone and notify the Environmental Engineer of conditions and progress hourly. Any changes that may result in significant impacts shall be reported immediately and a decision to halt drilling operations shall be reviewed with CTDEP.

Three 20,000-gallon frac tanks will be brought to the site within four to six hours to accept the bentonite/water mixture from the vacuum trucks. The frac tanks will provide for gravity settling. Tanks will be plumbed to decant water from the upper portion of the tank, and effluent will pass through a system of 25 micron bag filters (and sand filters as required) prior to discharge back into the harbor. The discharge will be visually checked to insure that it is not resulting in turbidity within the harbor. Accumulated solids shall be either dumped into roll-off containers for subsequent drying and disposal, or directly pumped into a bulk tanker. The bentonite will be disposed in accordance with applicable laws and regulations. The Environmental Engineer will be in communication with the

CTDEP Bureau of Water Management during this process to insure that the emergency treatment and discharge procedures are acceptable.

If the Environmental Engineer, CSC, and CTDEP determine that two vacuum trucks are not adequate to remediate the release in a timely manner, additional vacuum trucks of similar specifications will be mobilized to the site within eight hours of that determination. Additional frac tanks will also be mobilized as required.

In the event a bentonite release occurs outside the water, the release will immediately be contained with silt fencing or hay bales. The drilling fluid will be transferred manually or by pump into a storage tank and removed from the site. Condition 3 operations will commence. The contractor shall store 100 feet of additional silt fencing or hay bales on site to contain a release on land. The Environmental Engineer shall maintain records of the quantity of drilling fluid removed by vacuum equipment, transferal of the material to other containment, and daily status of cleanup operations. The HDD Contractor shall be responsible for testing and disposing of the vacuumed material and waste drilling fluids in an approved manner in accordance with all local, state, and federal regulations. Records or manifests of the disposal shall be furnished to the CTDEP upon completion of the work. The survey will continue to monitor any known areas of fluid release throughout the entire drilling program.

Significant Impacts

The identification of the conditions which constitute a significant impact will be based on several factors, as follow.

- Containment of the release by the bentonite containment system

Drilling fluid depositional depths which do not exceed 24 inches at the interface with the containment fence

- The presence and operation of the vacuum system equipment. Removal of drilling fluid deposits must exceed the rate of deposition from a continuing source.

In any event, the decision as to conditions which constitute a significant impact will be based on discussions between CTDEP, CSC, the Environmental Engineer, and the driller. The CTDEP shall make the final determination or ruling concerning impact decisions and further course of action.

Post Drilling Monitoring and Sampling Plan

In the event of a drilling fluid release, a site-specific post-remediation sampling protocol tailored to the actual impact area(s) will be submitted to the CTDEP and implemented by CSC. The protocol will be based upon the location, volume, and spatial extent of the release, with the goal of establishing whether adverse effects on benthic communities had occurred in the impact zone. Every effort will be made to follow a random sampling design in each impacted habitat, with comparisons made to un-impacted zones of the same habitat. Additionally, pre-drilling benthic data gathered in support of this permit application will be used for comparative purposes. Core samples will be collected where possible, both to monitor depositional thickness and to evaluate benthic macro invertebrate communities.

At a minimum, in the event of a drilling fluid release, an inspection of the entire drill path using remote sensing equipment with divers available to investigate any anomalies, will be conducted approximately 48 hours following the completion of all drilling activities, if requested by CTDEP. A brief report summarizing the status of drilling fluid deposits shall be presented. The occurrence of fresh releases following the end of drilling shall also be recorded.



The post-drill monitoring, in the event of no drilling fluid release, will consist of an underwater investigation to be conducted 30 days following the end of all drilling activities, if requested by CTDEP.

All releases which persist beyond the completion of drilling activities will be removed within 30 days following the completion of drilling activities or 30 days following post-drilling detection, if requested by the CTDEP, in accordance with the methods previously described.

Equipment

The following equipment shall be provided by the HDD Contractor and will be used for the monitoring program:

1. Survey Vessel
2. Global Positioning System
3. Vessel Trackline Control and Data Logging System
4. Side Scan Sonar with Slant Range Speed Correction
5. Underwater Color Camera with Lighting and Deployment Sled or Remotely Operated Vehicle
6. Core Sampler
7. Shipek Grab Sampler

Specifications for the above will be provided by CSC to CTDEP prior to initiation of the project.